



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Display frame

Test Model: US-65550

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Monkey Li
Supervised by:	Li Huan



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A.1 DTS Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.624	2402.336	0.5	PASS
		2440	0.716	2439.624	2440.340	0.5	PASS
		2480	0.712	2479.628	2480.340	0.5	PASS
BLE_2M	Ant1	2402	1.396	2401.264	2402.660	0.5	PASS
		2440	1.408	2439.300	2440.708	0.5	PASS
		2480	1.328	2479.308	2480.636	0.5	PASS



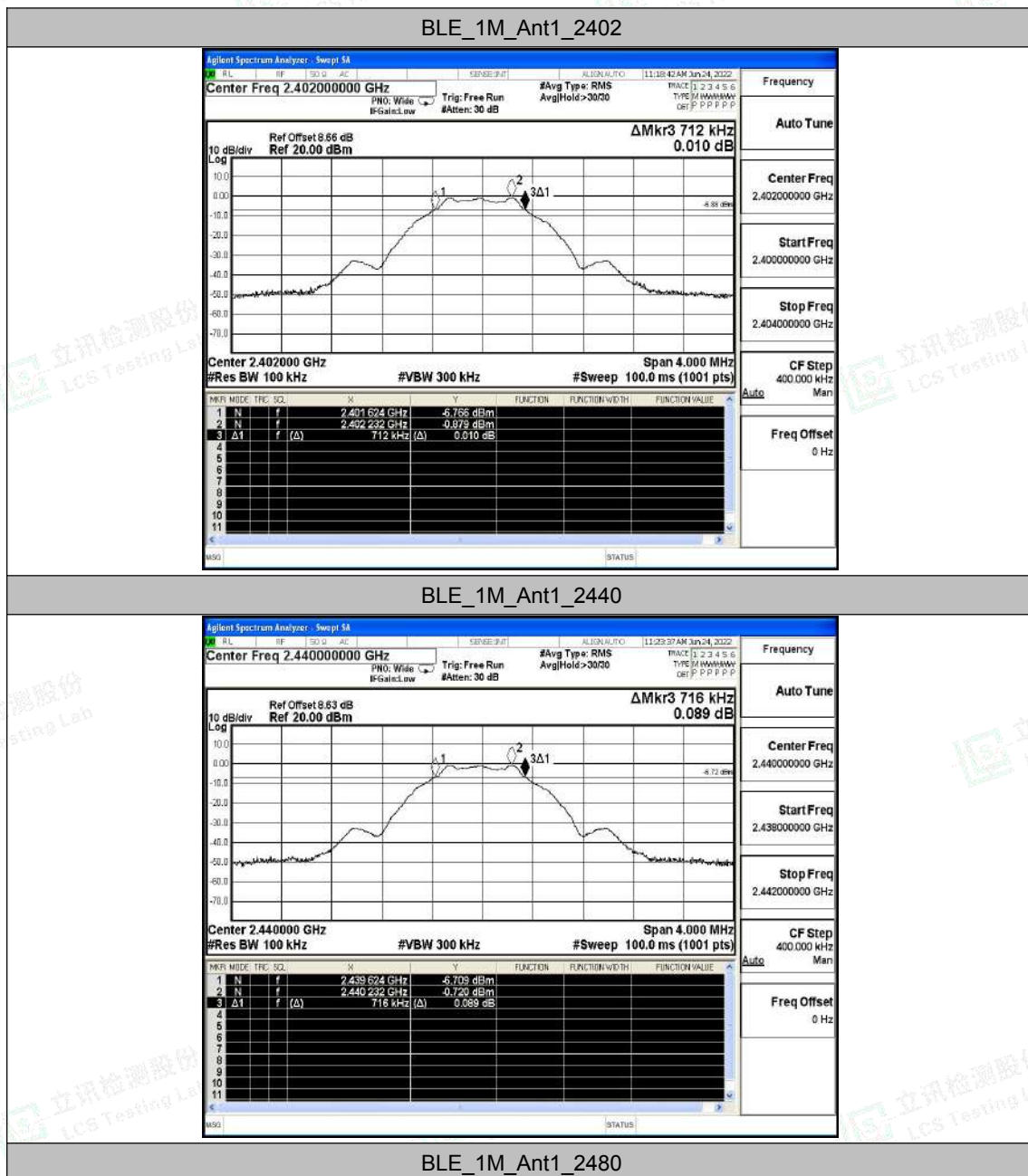
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Test Graphs

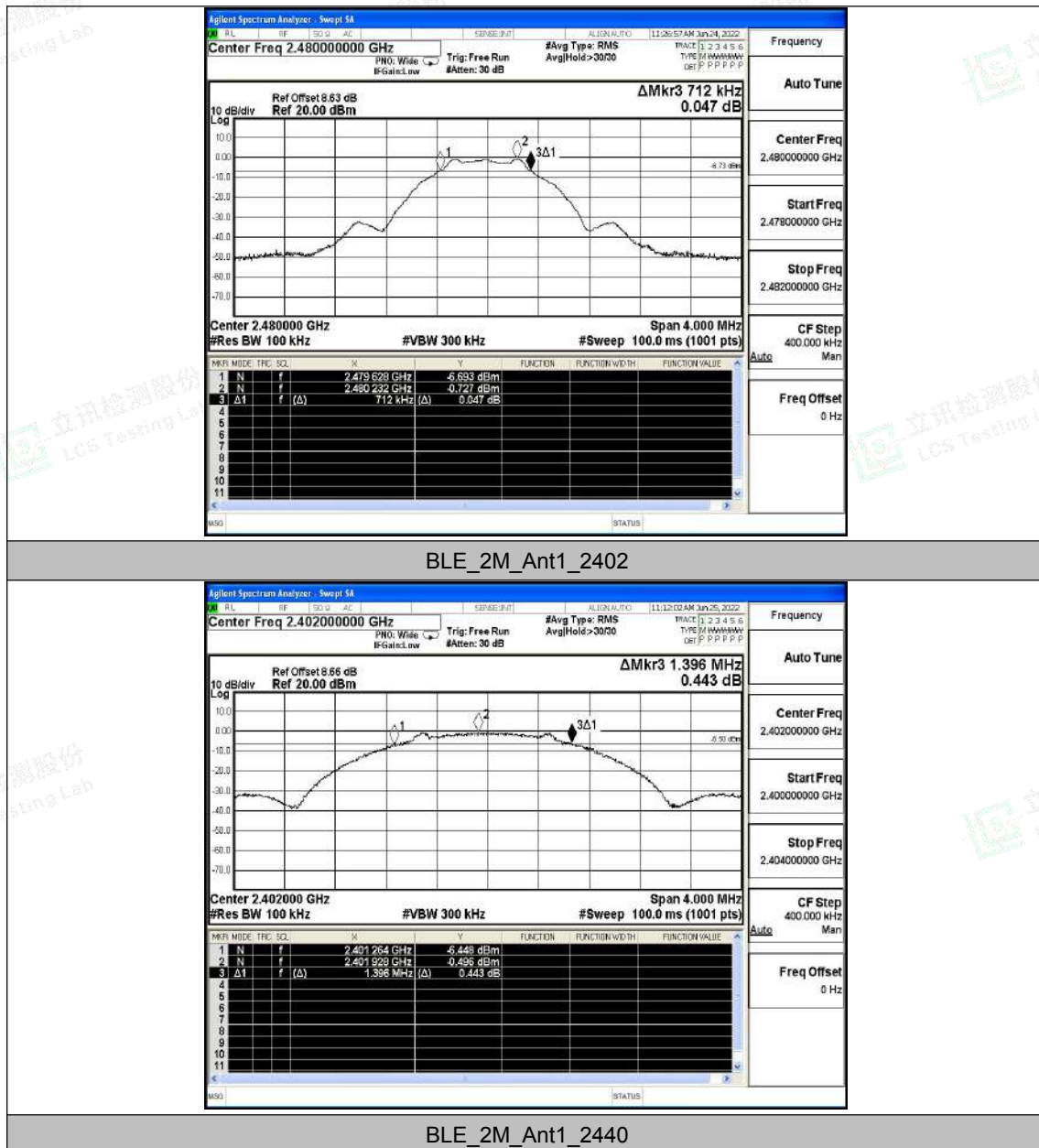


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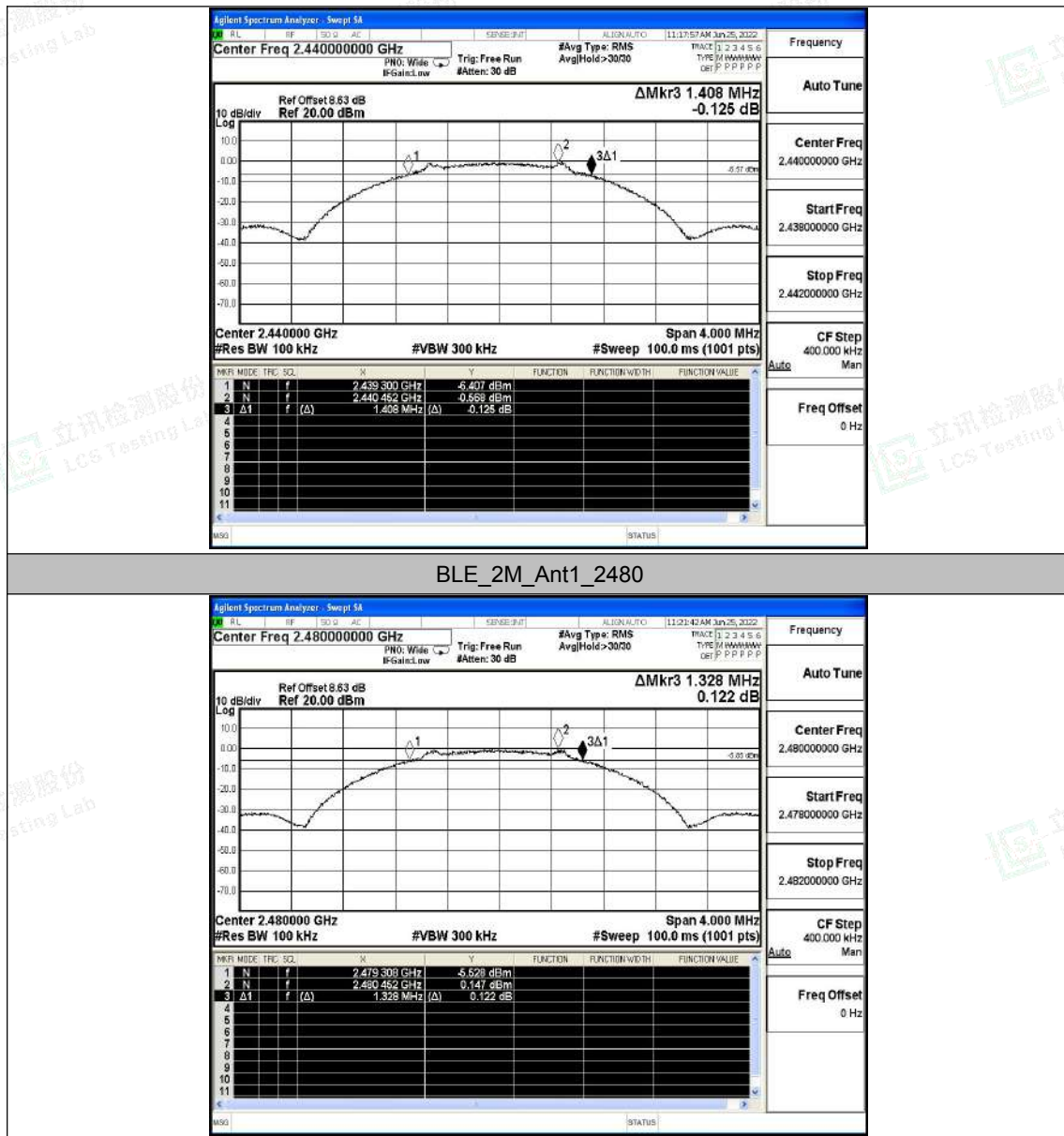


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A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.09	≤30	PASS
		2440	0.24	≤30	PASS
		2480	0.23	≤30	PASS
BLE_2M	Ant1	2402	-0.34	≤30	PASS
		2440	-0.37	≤30	PASS
		2480	-0.15	≤30	PASS

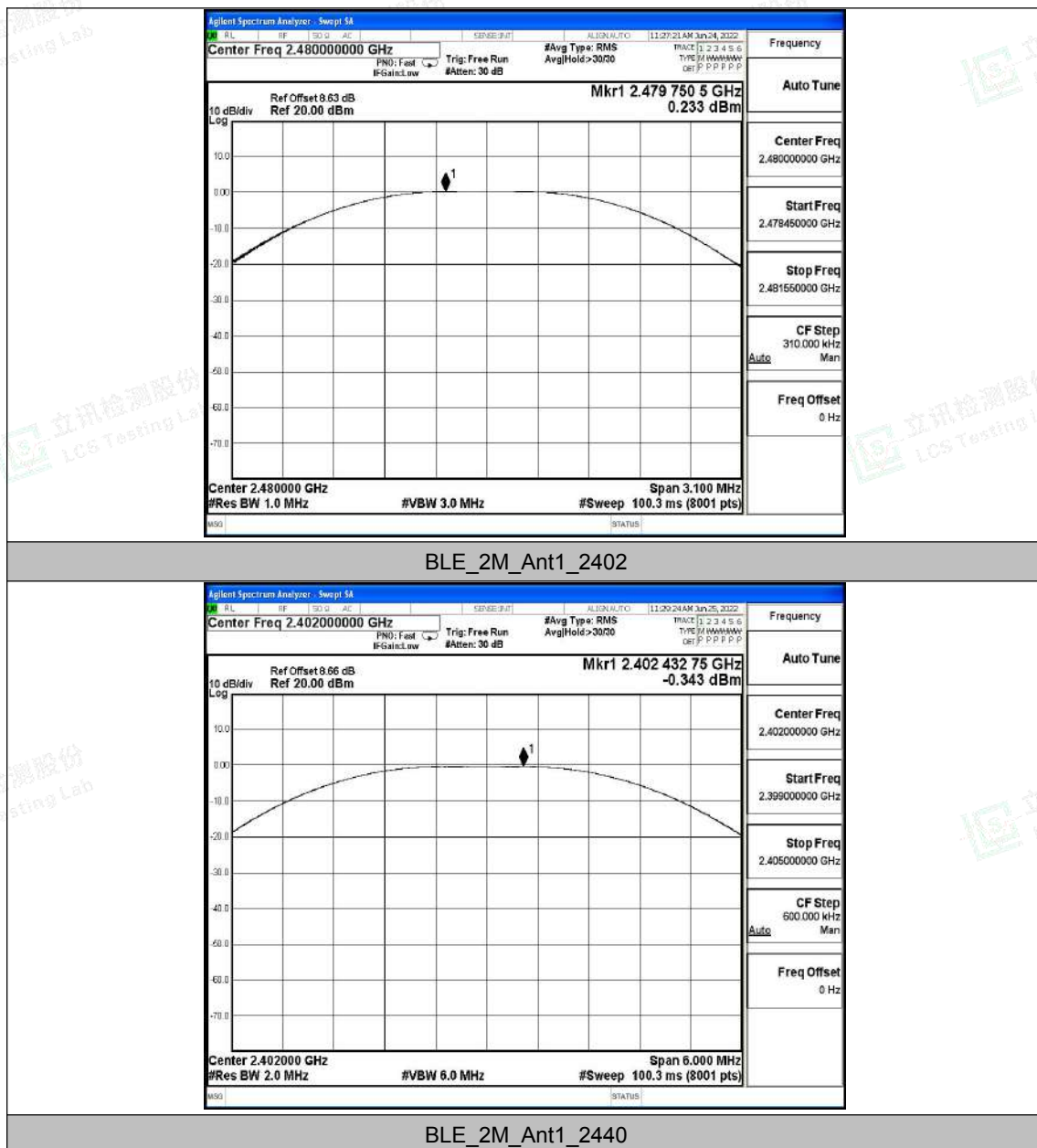


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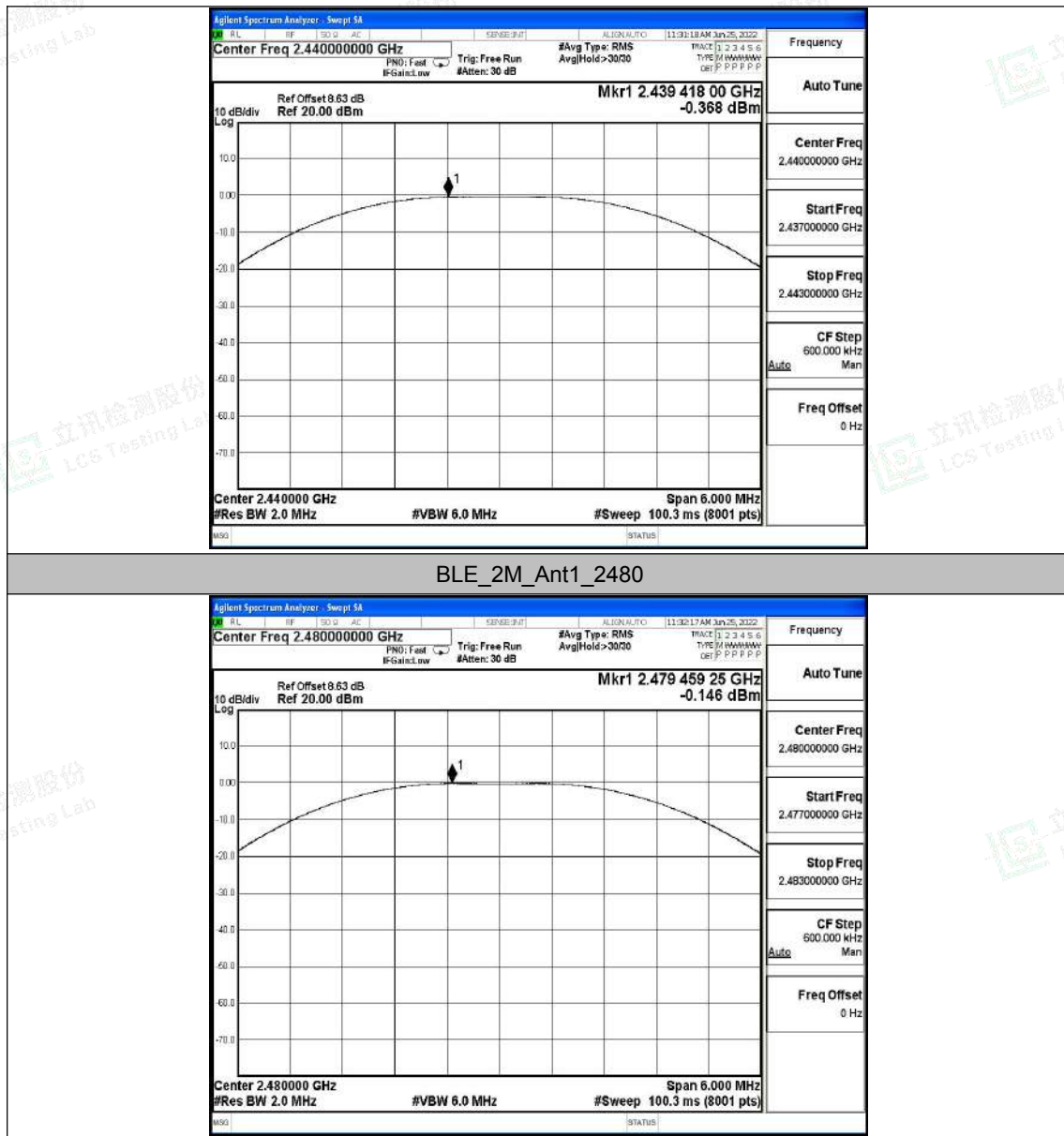


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A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-14.98	≤8.00	PASS
		2440	-14.87	≤8.00	PASS
		2480	-14.86	≤8.00	PASS
BLE_2M	Ant1	2402	-13.29	≤8.00	PASS
		2440	-12.83	≤8.00	PASS
		2480	-12.94	≤8.00	PASS



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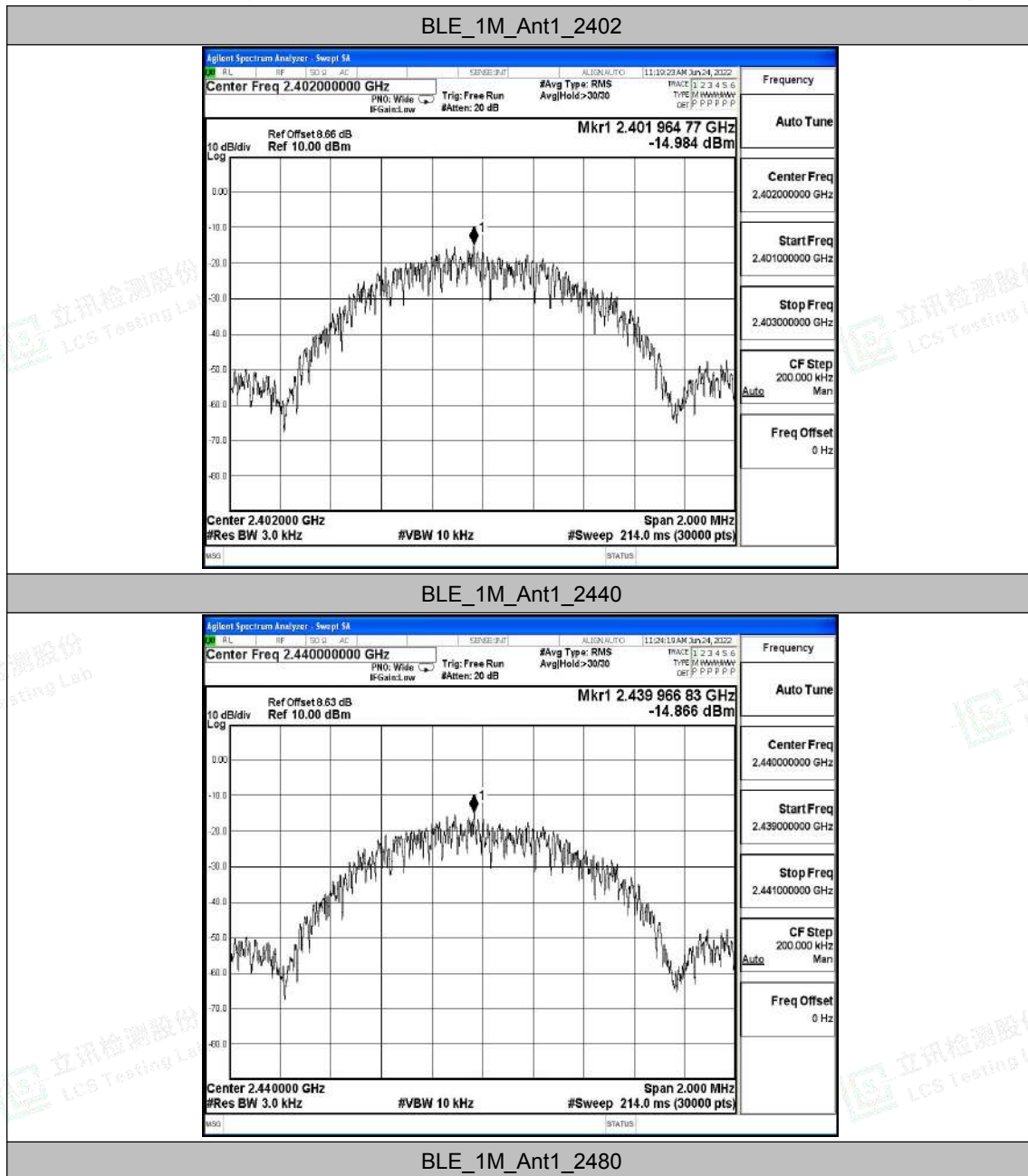
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Test Graphs

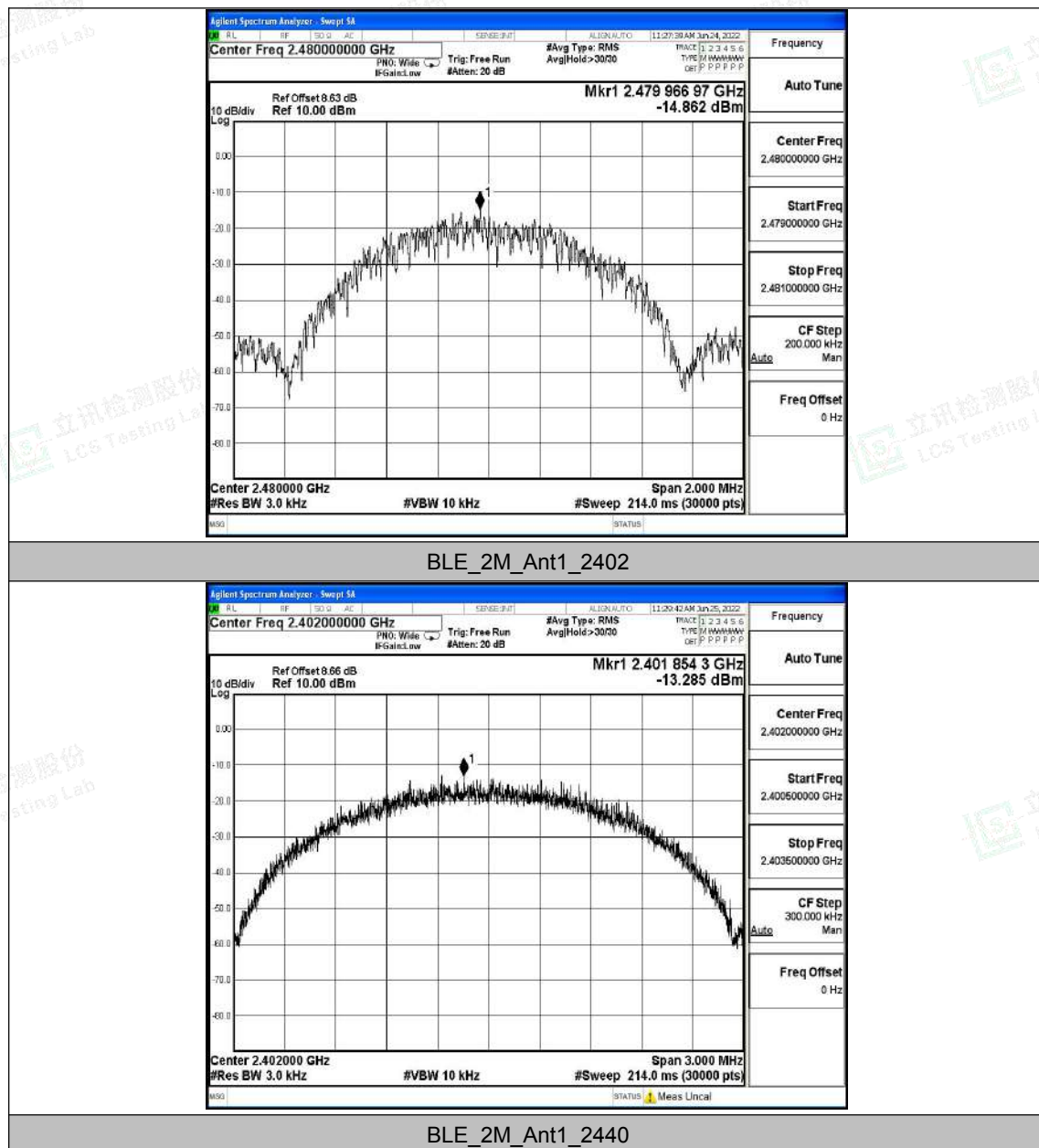


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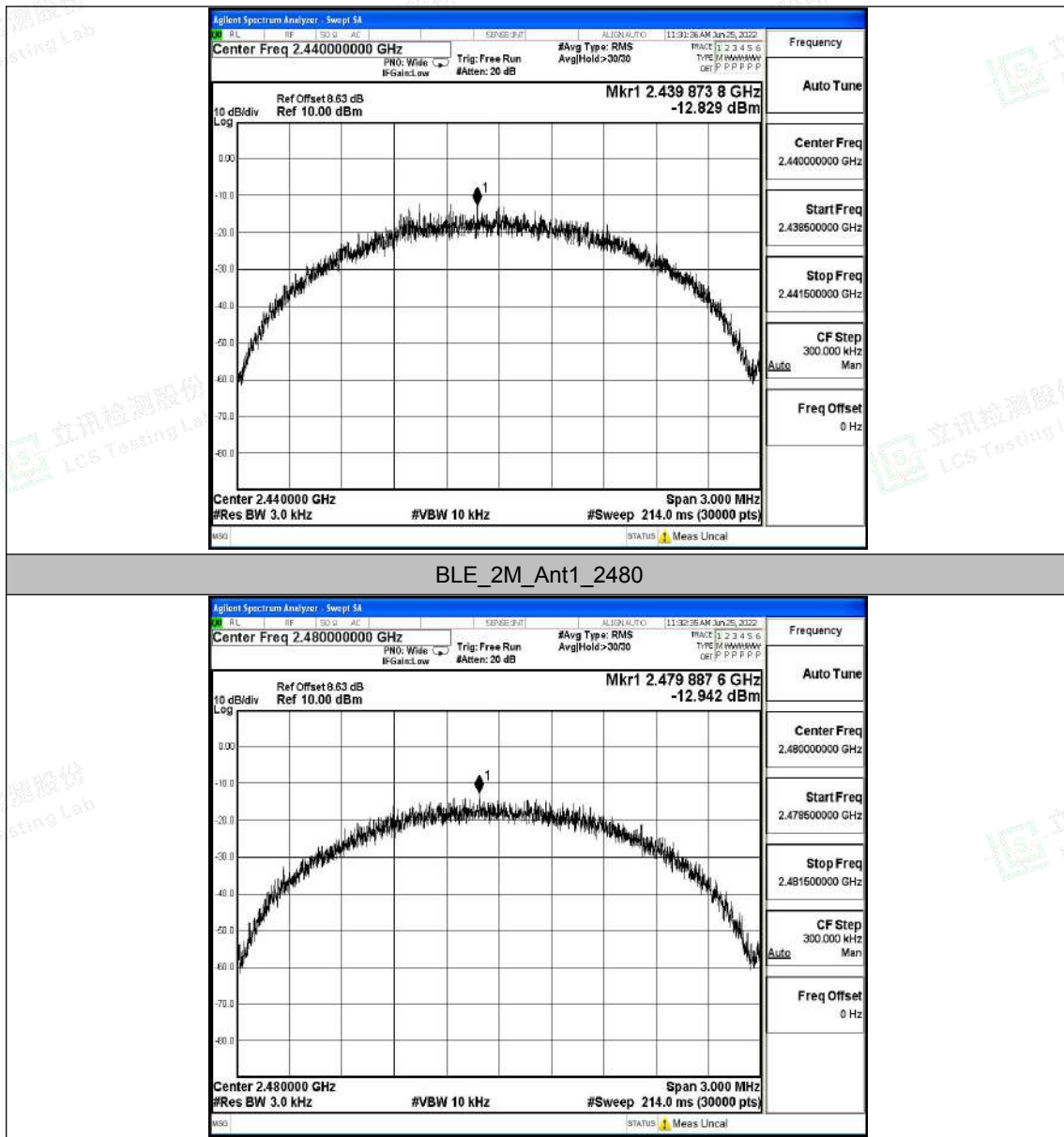


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A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.59	-56.04	≤ -20.59	PASS
		High	2480	-0.52	-57.56	≤ -20.52	PASS
BLE_2M	Ant1	Low	2402	-0.41	-32.27	≤ -20.41	PASS
		High	2480	-0.48	-57.71	≤ -20.48	PASS



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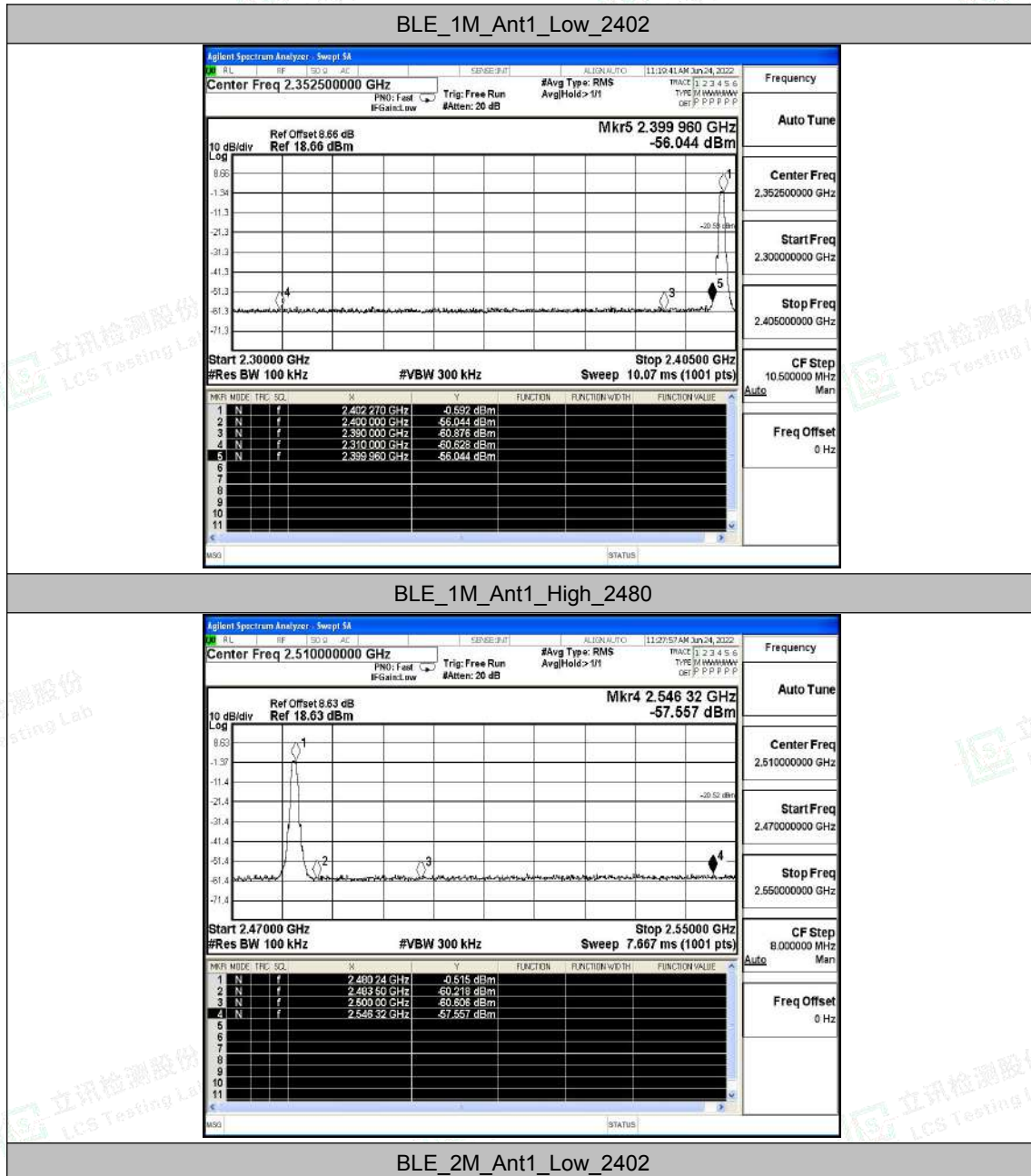
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Test Graphs

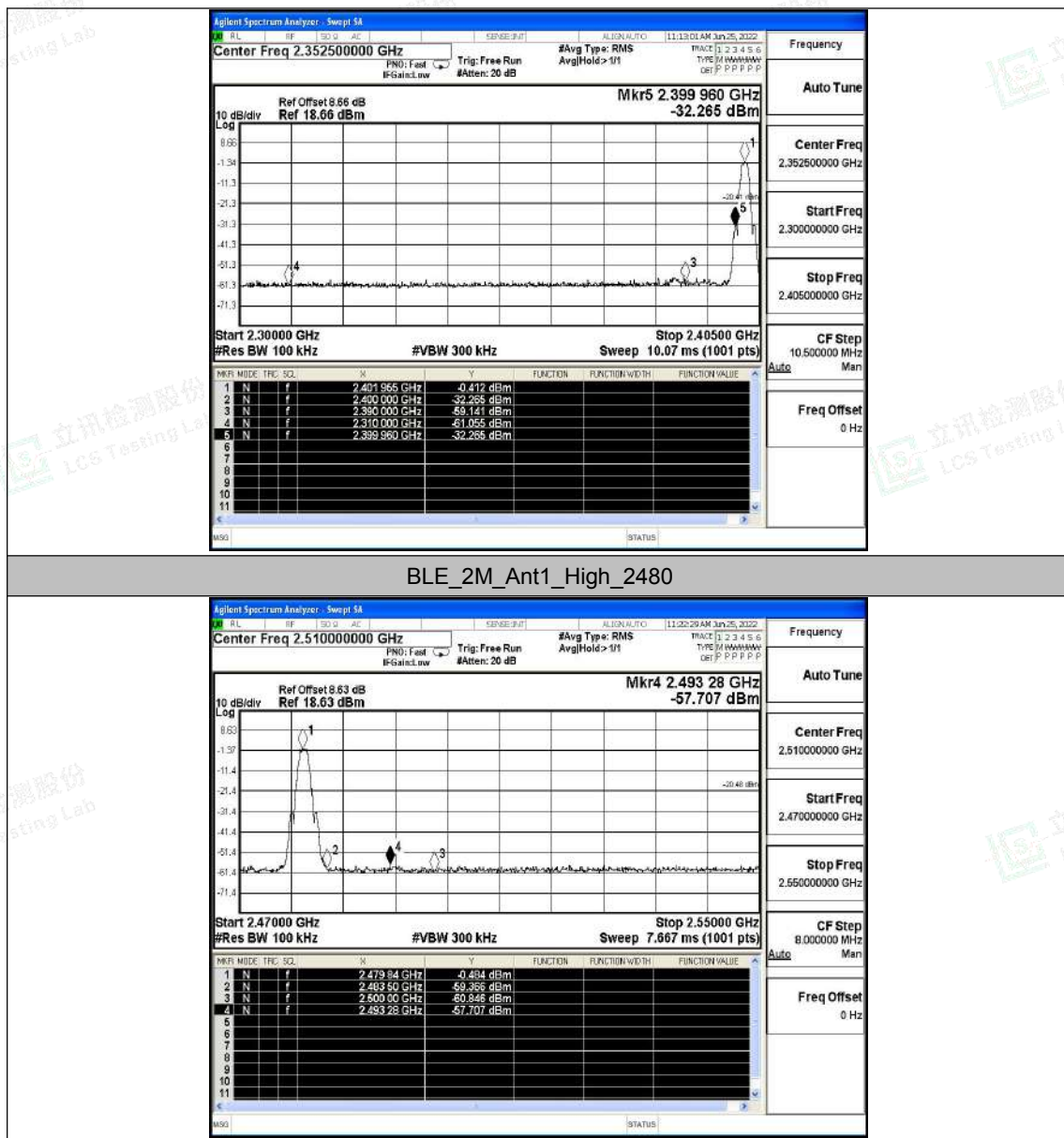


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A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.77	-0.77	---	PASS
			30~1000	-0.77	-60.01	≤-20.77	PASS
			1000~26500	-0.77	-45.28	≤-20.77	PASS
		2440	Reference	-0.72	-0.72	---	PASS
			30~1000	-0.72	-60.47	≤-20.72	PASS
			1000~26500	-0.72	-46.37	≤-20.72	PASS
		2480	Reference	-0.72	-0.72	---	PASS
			30~1000	-0.72	-60.3	≤-20.72	PASS
			1000~26500	-0.72	-46.35	≤-20.72	PASS
BLE_2M	Ant1	2402	Reference	-0.82	-0.82	---	PASS
			30~1000	-0.82	-51.96	≤-20.82	PASS
			1000~26500	-0.82	-45.81	≤-20.82	PASS
		2440	Reference	-0.57	-0.57	---	PASS
			30~1000	-0.57	-52.66	≤-20.57	PASS
			1000~26500	-0.57	-46.24	≤-20.57	PASS
		2480	Reference	-0.72	-0.72	---	PASS
			30~1000	-0.72	-53.15	≤-20.72	PASS
			1000~26500	-0.72	-45.98	≤-20.72	PASS



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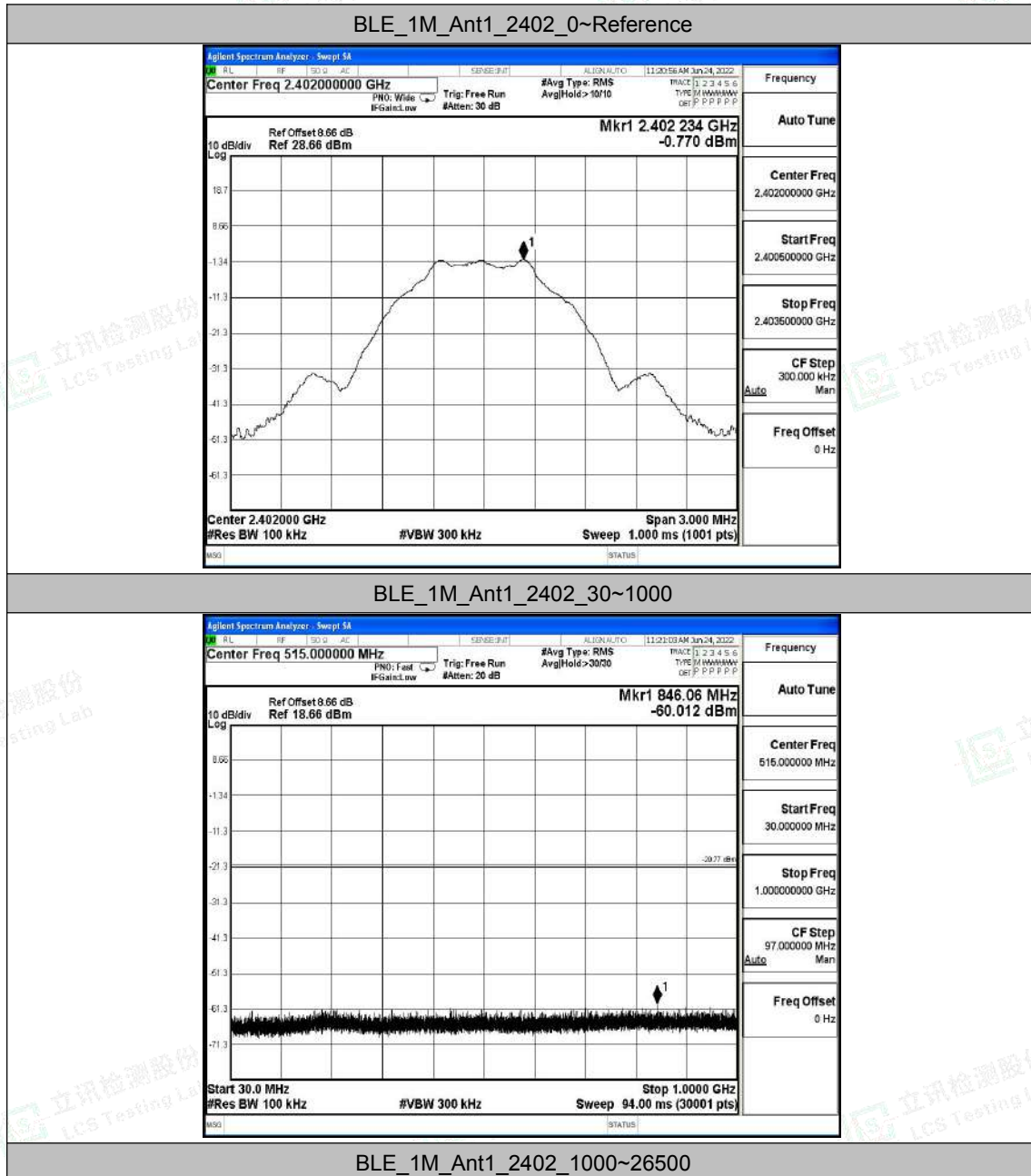
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Test Graphs

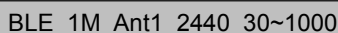
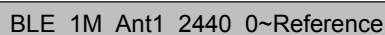


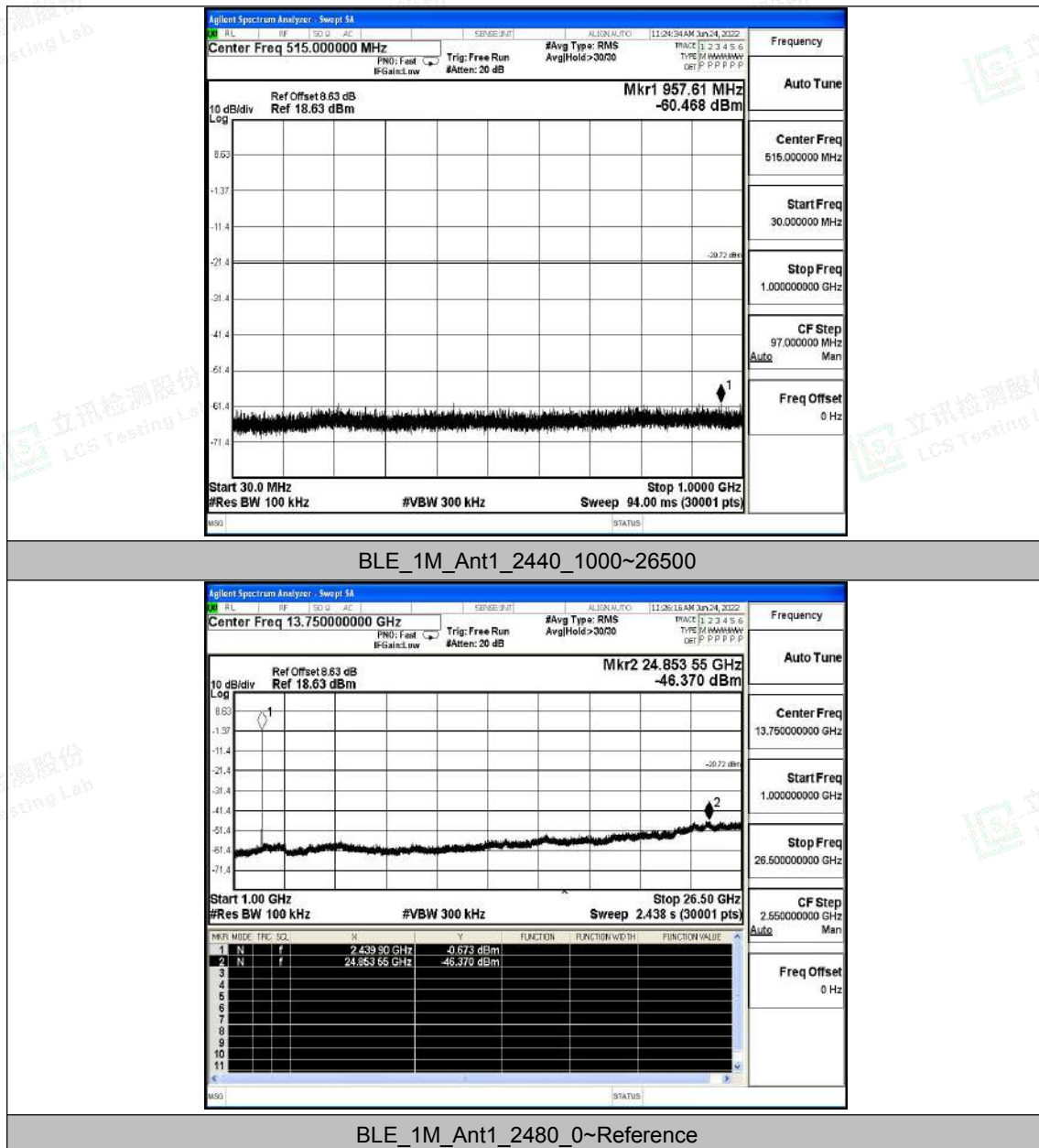
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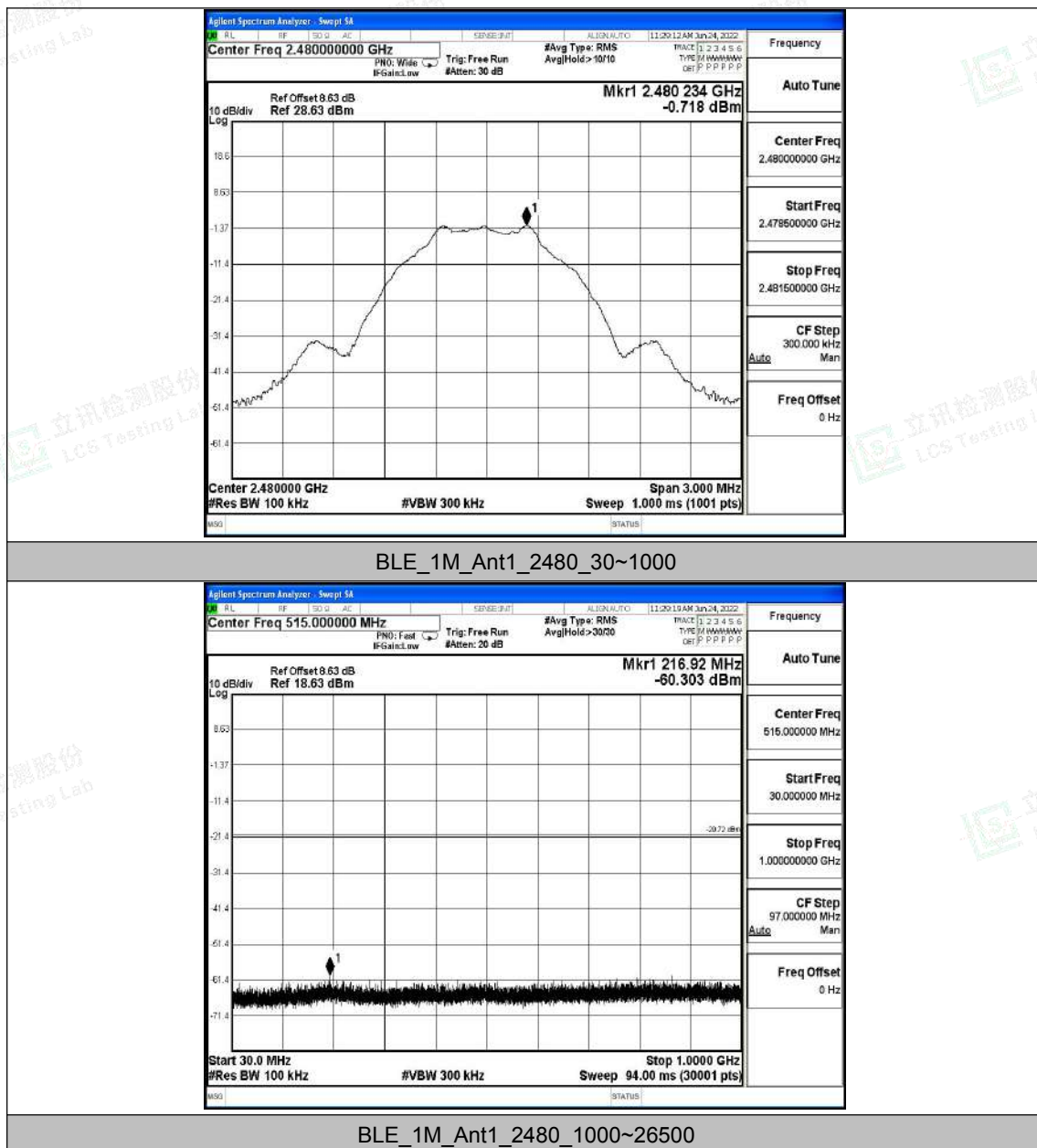


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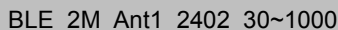
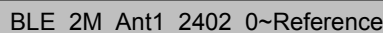


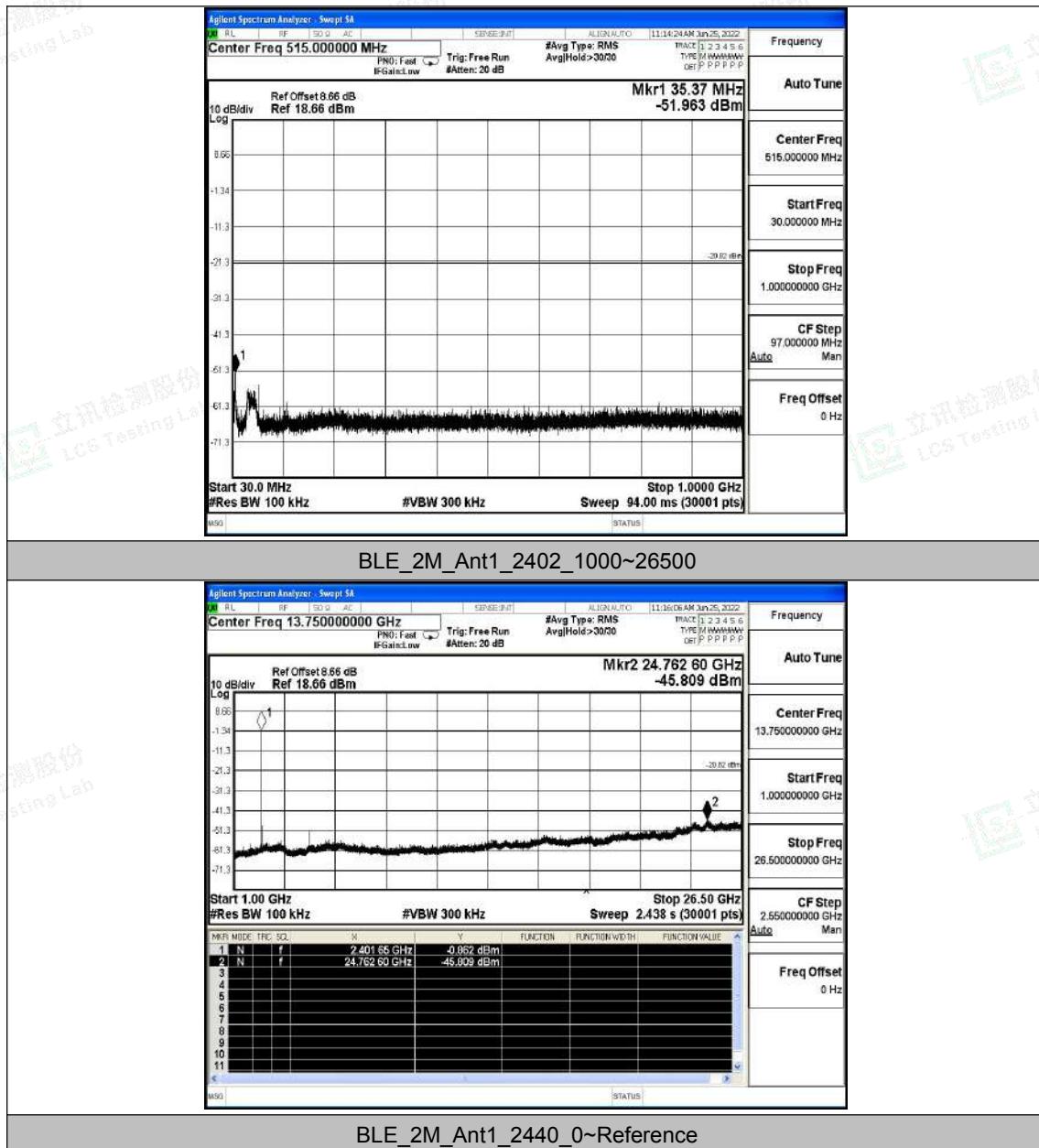
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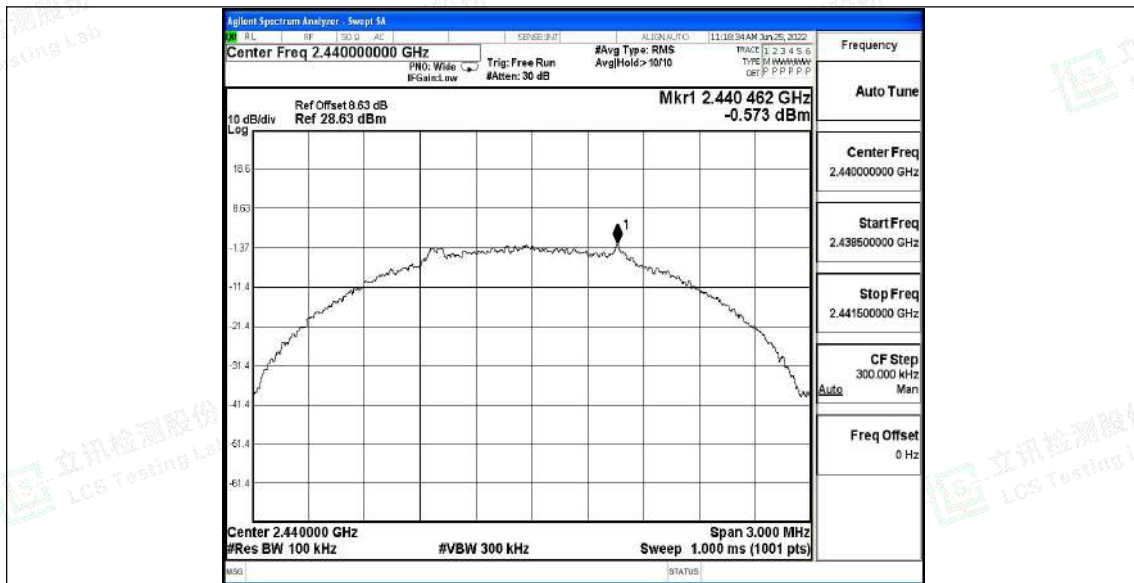


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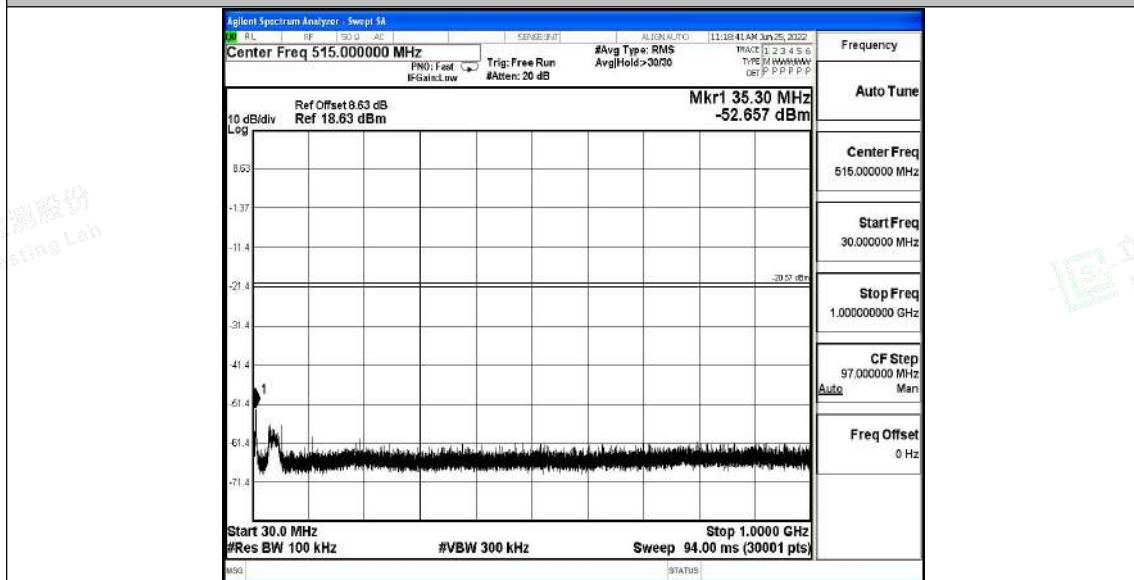
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BLE_2M_Ant1_2440_30~1000



BLE_2M_Ant1_2440_1000~26500

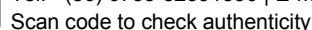
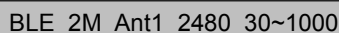
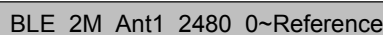


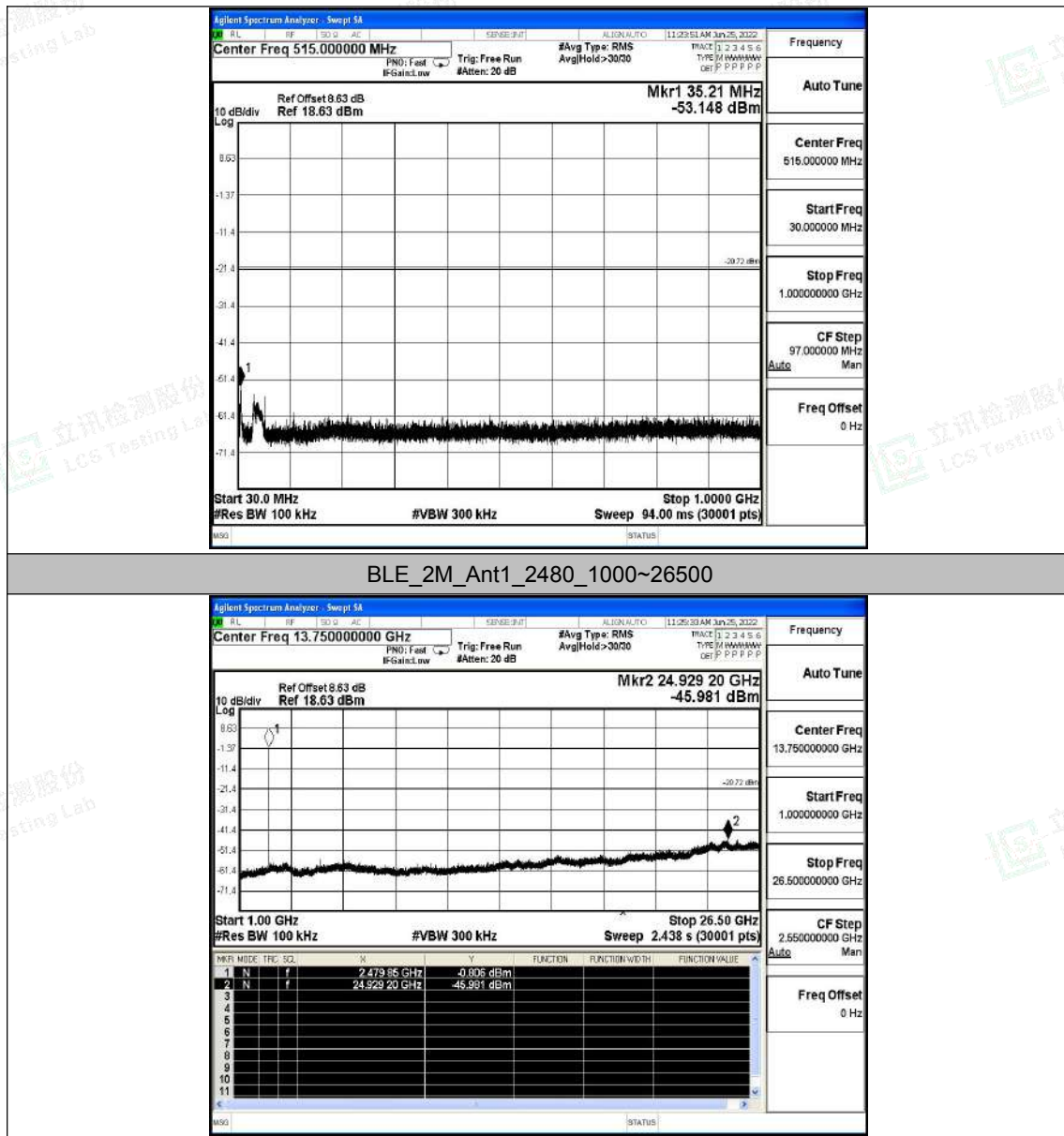
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A.6 Duty Cycle

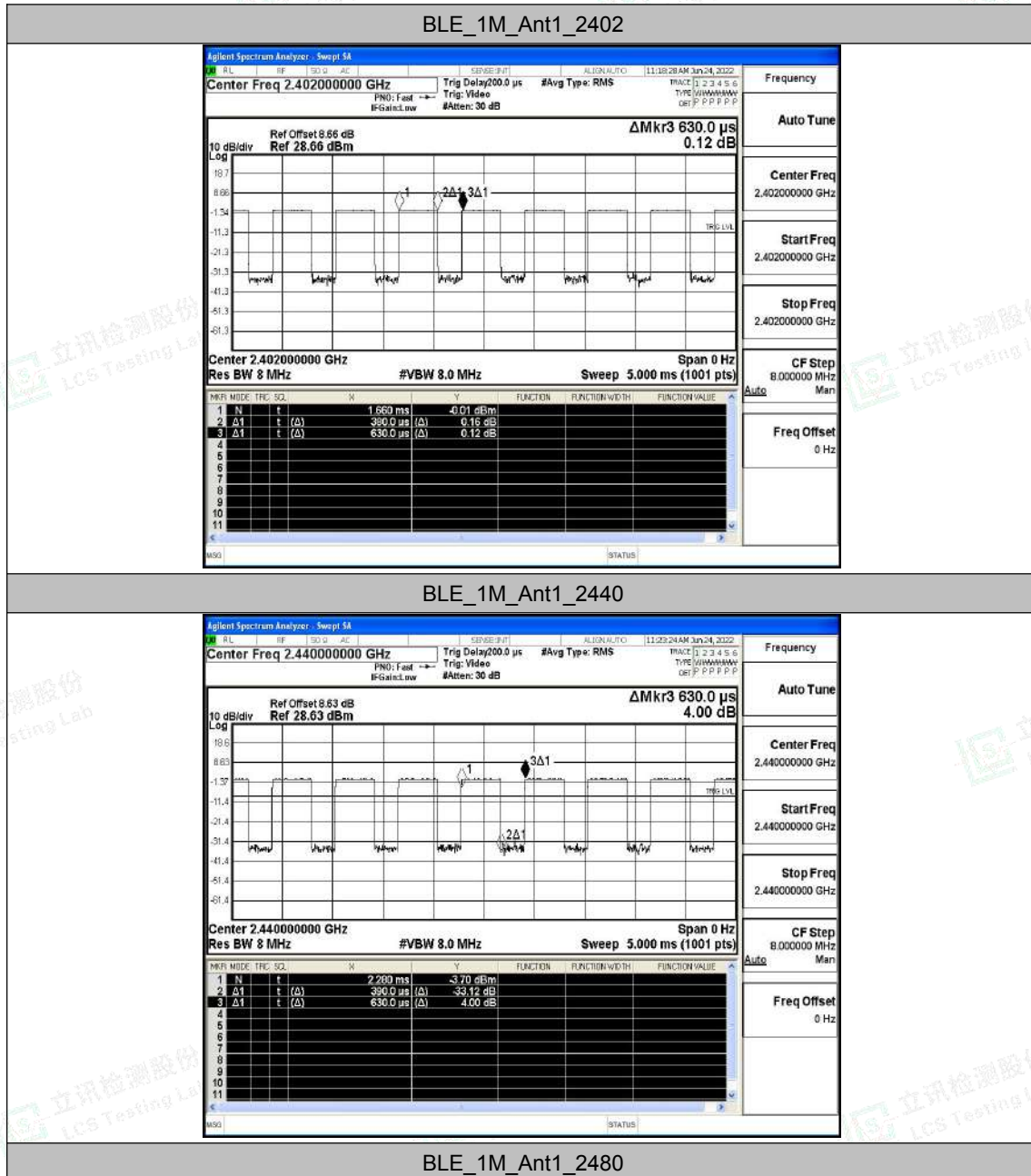
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2440	0.39	0.63	0.6190	61.90	2.08	2.56	---	---
		2480	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
BLE_2M	Ant1	2402	0.55	1.25	0.4400	44.00	3.57	1.82	---	---
		2440	0.56	1.25	0.4480	44.80	3.49	1.79	---	---
		2480	0.56	1.25	0.4480	44.80	3.49	1.79	---	---





Test Graphs

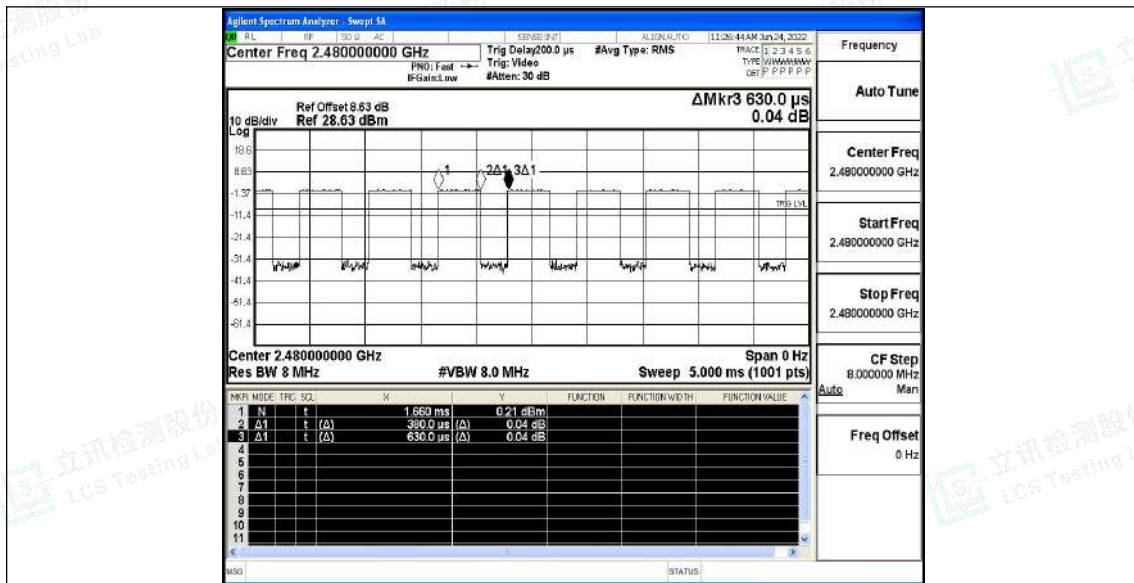


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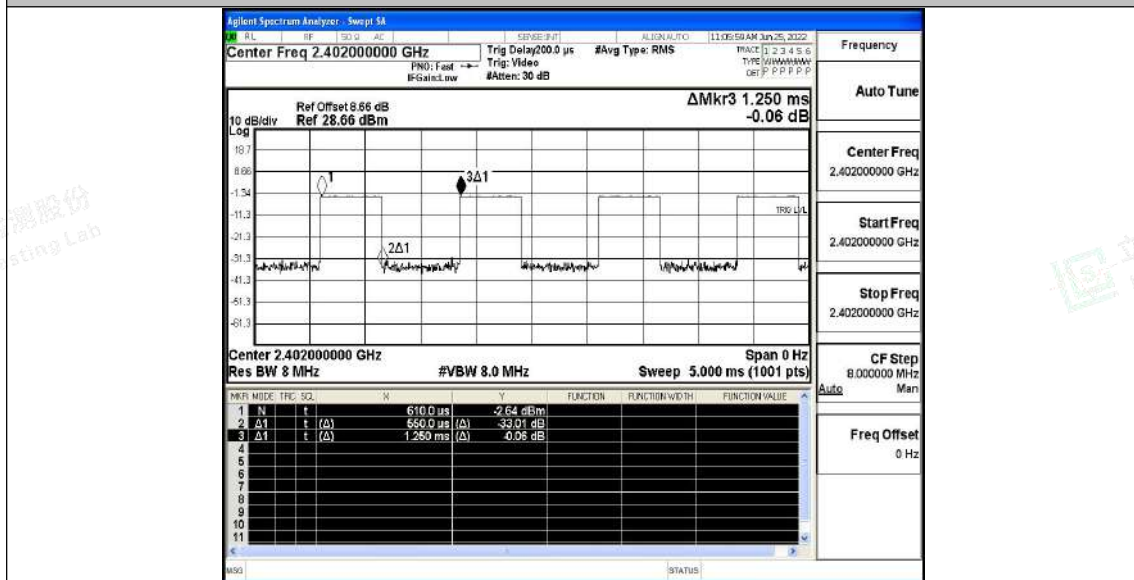
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BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

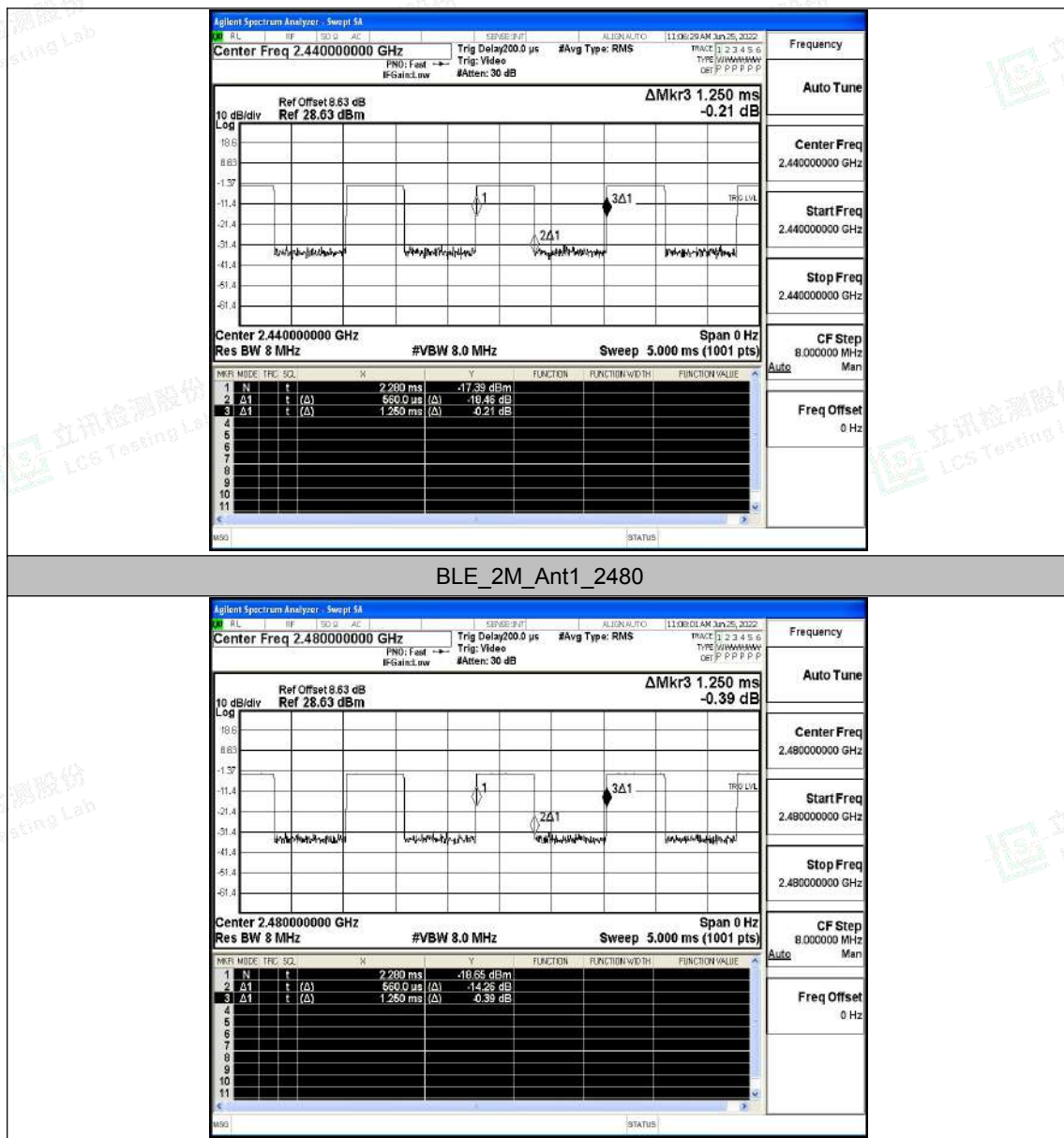


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A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.11	≤-41.20	38.09	≤54	PASS
				AV	2359.535	-56.19	≤-41.20	39.01	≤54	PASS
				AV	2390.000	-56.65	≤-41.20	38.55	≤54	PASS
				Peak	2310.000	-48.6	≤-21.20	46.60	≤74	PASS
				Peak	2352.395	-45.74	≤-21.20	49.46	≤74	PASS
				Peak	2390.000	-48.54	≤-21.20	46.66	≤74	PASS
		High	2480	AV	2483.500	-53.4	≤-41.20	41.80	≤54	PASS
				AV	2483.520	-53.4	≤-41.20	41.80	≤54	PASS
				AV	2500.000	-56.09	≤-41.20	39.11	≤54	PASS
				Peak	2483.500	-47.32	≤-21.20	47.88	≤74	PASS
				Peak	2492.320	-45.57	≤-21.20	49.63	≤74	PASS
				Peak	2500.000	-47.43	≤-21.20	47.77	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.6	≤-41.20	37.60	≤54	PASS
				AV	2387.885	-54.27	≤-41.20	40.93	≤54	PASS
				AV	2390.000	-55.35	≤-41.20	39.85	≤54	PASS
				Peak	2310.000	-47.93	≤-21.20	47.27	≤74	PASS
				Peak	2387.780	-41.05	≤-21.20	54.15	≤74	PASS
				Peak	2390.000	-47.18	≤-21.20	48.02	≤74	PASS
		High	2480	AV	2483.500	-46.94	≤-41.20	48.26	≤54	PASS
				AV	2483.520	-46.94	≤-41.20	48.26	≤54	PASS
				AV	2500.000	-56.54	≤-41.20	38.66	≤54	PASS
				Peak	2483.500	-44.7	≤-21.20	50.50	≤74	PASS
				Peak	2494.000	-43.02	≤-21.20	52.18	≤74	PASS
				Peak	2500.000	-47.91	≤-21.20	47.29	≤74	PASS

Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



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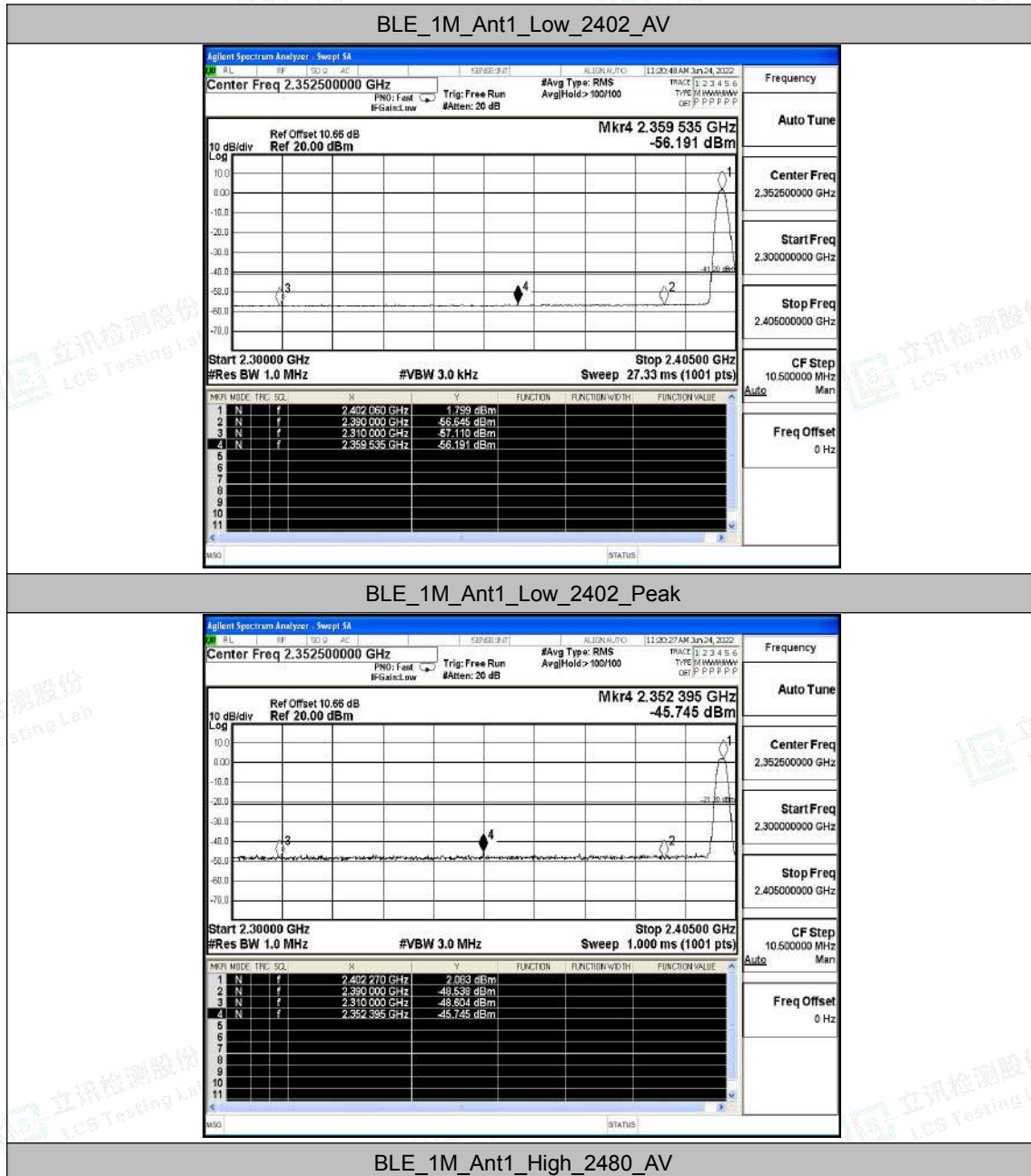
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Test Graphs

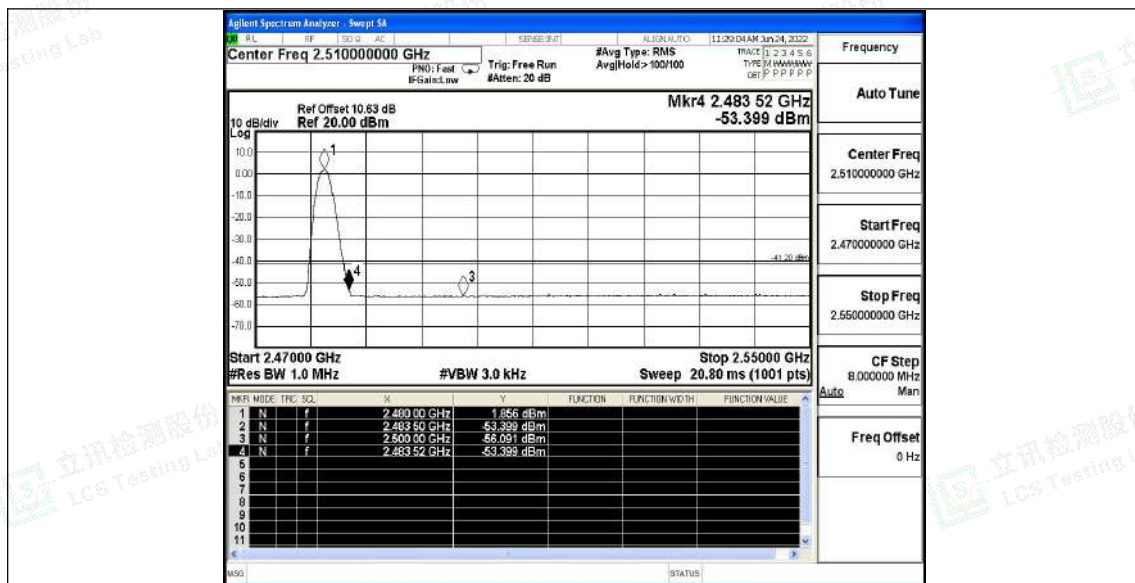


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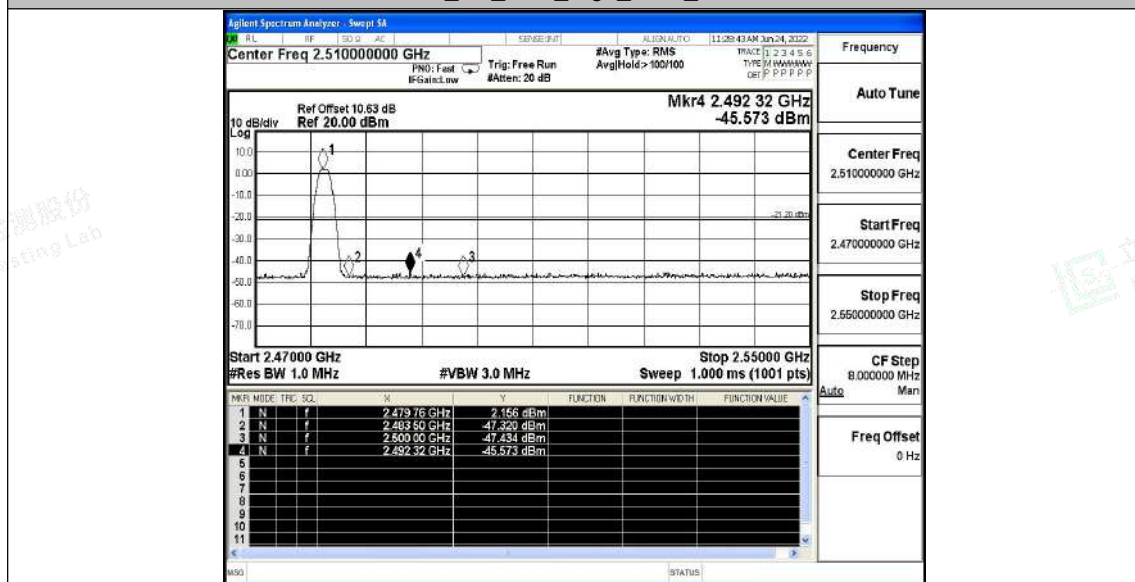
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BLE_1M_Ant1_High_2480_Peak



BLE_2M_Ant1_Low_2402_AV

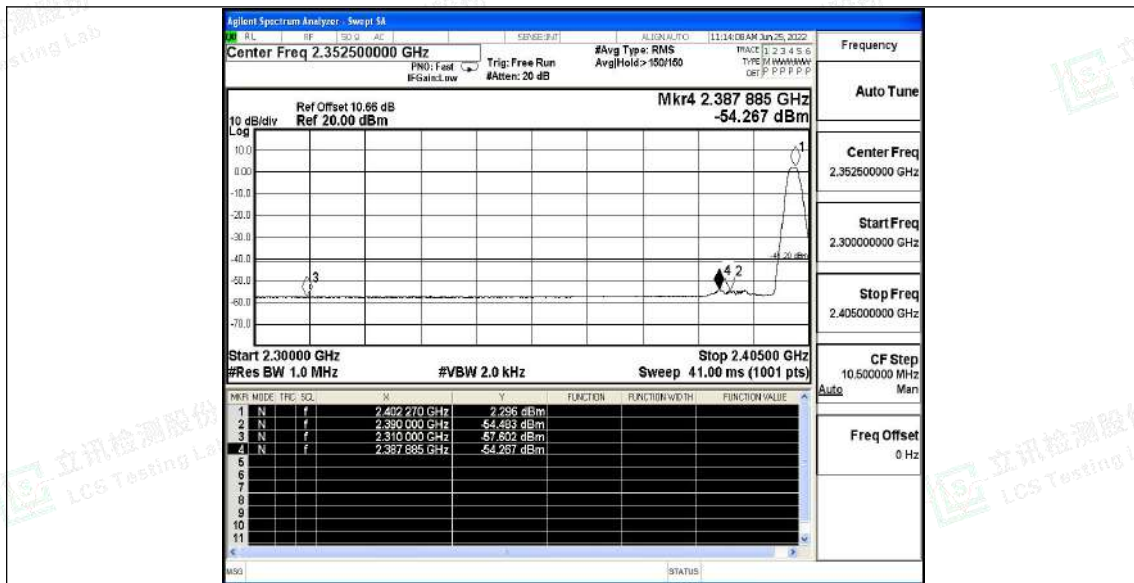


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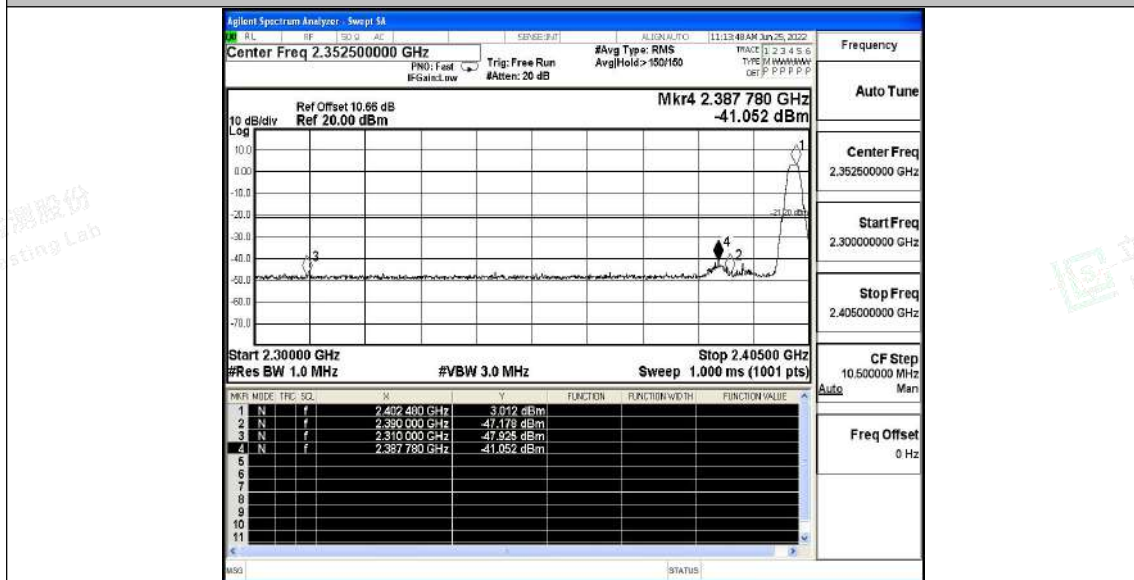
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

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BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV

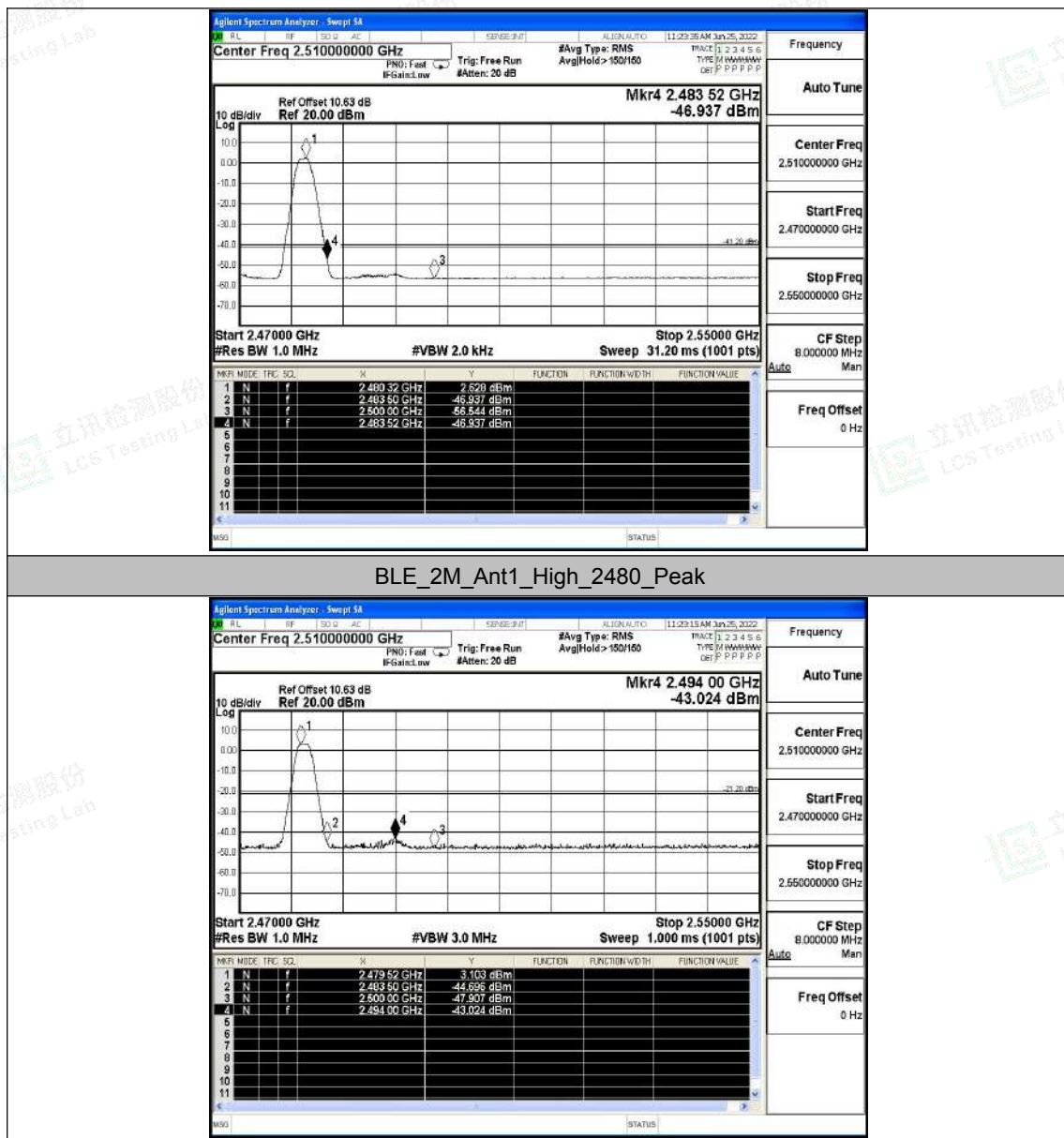


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